

CLAIMS

[1] An engine comprising:

a cylinder head (14) forming a portion of an engine body (11);

an intake valve operating device (28) having an intake camshaft (30);

an intake valve (20) driven for opening and closing operations by the intake valve operating device (28), the intake valve (20) being provided in the cylinder head (14);

an exhaust valve operating device (33) having an exhaust camshaft (35); and

an exhaust valve (21) driven for opening and closing operations by the exhaust valve operating device (33), the exhaust valve (21) being provided in the cylinder head (14),

characterized in that the intake camshaft (30) is placed higher in position than the exhaust camshaft (35) by increasing the distance between the intake camshaft (30) and a combustion chamber (17) along a cylinder axis (C) of the engine body (11) relative to the distance between the exhaust camshaft (35) and the combustion chamber (17).

[2] The engine according to claim 1, wherein the intake valve operating device (28) has a variable lift mechanism (32) capable of changing the valve opening lift amount of the intake valve (20), and the exhaust valve operating device (33) has the exhaust camshaft (35) and an exhaust rocker arm (36) linked and connected to the exhaust valve (21) so as to swing by following the exhaust camshaft (35).

[3] The engine according to claim 1, wherein the engine body (11) is placed in an attitude such that the cylinder axis (C) is inclined toward the exhaust valve operating device (33).

[4] The engine according to claim 1, wherein the direction of rotation of the intake camshaft (30) is set so that the intake camshaft rotates by moving upward on the side where the intake camshaft faces the exhaust valve operating device (33).

[5] The engine according to claim 2, wherein the intake valve operating device (28) includes the intake camshaft (30) having an intake valve operating cam (29), an intake rocker arm having a cam contact portion (50) which contacts the intake valve operating cam (29), the intake rocker arm (31) being linked and connected to the intake valve (20) so as to apply a force to the intake valve (20) in the valve opening direction, and the variable lift mechanism (32), and wherein the variable lift mechanism (32) has a first link arm (58) having one end thereof turnably connected to the intake rocker arm (31) and the other end turnably supported at a fixed position on the engine body (11) through a fixed supporting shaft (57), and a second link arm (59) having one end thereof turnably connected to the intake rocker arm (31) and the other end turnably supported on a movable supporting shaft (60) capable of being displaced.

[6] The engine according to claim 5, wherein the fixed supporting shaft (57) and the movable supporting shaft (60) are placed inside a portion for linkage and connection of the

intake rocker arm (31) to the intake valve (20), and a portion of the exhaust valve operating device (33) for swingably supporting the exhaust rocker arm (36) is placed outside a portion for linkage and connection of the exhaust rocker arm (36) and the exhaust valve (21).

[7] The engine according to claim 6, wherein a plug cylinder (87) inclined so as to be brought closer to the exhaust valve operating device (33) at a position closer to an upper end thereof is mounted in the cylinder head (14) by being placed between the intake valve operating device (28) and the exhaust valve operating device (33).